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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,244	10/21/2005	Kaoru Higuchi	63,131 (70904)	6116

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BOSTON, MA 02205

EXAMINER

TRAN, HUAN HUU

ART UNIT	PAPER NUMBER
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2861

MAIL DATE	DELIVERY MODE
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07/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/529,244

Applicant(s)

HIGUCHI ET AL.

Examiner

Huan H. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-9 and 11-37 is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☒ Claim(s) 2-5 and 10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/24/05, 08/12/05</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 2002-172787 cited in the IDS filed on 03/24/05.

As to claim 1, with reference to Fig. 1 and 3, JP 2002-172787 discloses an electrostatic attraction fluid jet device which ejects a fluid, which is electrified by a voltage application, by an electrostatic attraction in the form of a droplet from a fluid-ejecting hole of a nozzle made of an insulating material (see paragraph [0007]), wherein a diameter of the fluid-ejecting hole of the nozzle is equal to or less than $\Phi 8 \mu\text{m}$. See paragraph [0005] of the computer-translated translation of the reference. It is noted that the symbol Φ is usually used to indicate the diameter of a circular section in engineering.

Allowable Subject Matter

4. Claims 6-9, 11-14, 15-18, 19-21, 22-24, 25-27, 28-37 are allowed.
5. Claims 2-5, 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

As to claim 6 and dependent claims thereof, prior art do not teach or suggest at least the limitation "a diameter of the fluid-ejecting hole of the nozzle is equal to or less than a diameter of the droplet, which has just been ejected, of the fluid."

Claim 2 and dependent claims thereof are allowable because prior art do not appear to teach or suggest the limitation "the applied voltage control means controlling the voltage applied to the fluid so that the amount of the droplet, which has just been ejected from the fluid-ejecting hole, of the fluid is equal to or less than 1 pI"

Claim 11 and dependent claims thereof are allowable because prior art do not teach or suggest the limitation "the applied voltage control means controls a Voltage applied to the fluid so that the amount of electric charge, induced to the droplet of the fluid which droplet has just been ejected from the fluid-ejecting hole, is equal to or less than 90 % of the amount of electric charge corresponding to Rayleigh limit of the droplet."

Claim 15 and dependent claims thereof are allowable because of the inclusion of the limitation "a diameter of the fluid-ejecting hole of the nozzle is equal to or less than a diameter of the droplet, which has just been ejected, of the fluid, and the applied voltage control means controls a voltage applied to a fluid so that the amount of electric charge, induced to a droplet of the fluid which droplet has just been ejected from the fluid-ejecting hole, is equal to or less than the amount of electric charge corresponding to Rayleigh limit of the droplet which has just been ejected by an electric-field whose intensity is maximum at the meniscus"

Claims 22-24 are allowable because of the inclusion of the limitation "a diameter of the fluid-ejecting hole of the nozzle is equal to or less than a diameter of the droplet, which has just been ejected, of the fluid, and the applied voltage control means controls a voltage applied to the fluid so that an average velocity of the fluid, which is ejected and lands on a printing medium, is not less than 10 m/s and not more than 40 m/s."

Claim 19 and dependent claims thereof are allowable because of the inclusion of the limitation "the applied voltage control means controls a voltage applied to the fluid so that an average velocity of the fluid, which is ejected and lands on a printing medium, is not less than 10 m/s and not more than 40 m/s."

Claim 25 and dependent claims thereof are allowable because of the inclusion of the limitation "a particle diameter of each of the fine particles contained in the fluid is equal to or less than Φ 30 nm."

Claim 28-30 are allowable because of the inclusion of the limitation "a diameter of the fluid-ejecting hole of the nozzle is equal to or less than a diameter of the droplet, which has just been ejected, of the fluid, and a particle diameter of each of the fine particles contained in the fluid is equal to or less than Φ 30 nm."

Claim 31 is allowable because of the inclusion of the limitation "in the electrostatic attraction fluid jet device, a diameter of the fluid-ejecting hole of the nozzle being equal to or

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less than a diameter of the droplet, which has just been ejected, of the fluid" and the limitation "the process control section controlling a voltage applied to the electrode so that the amount of a droplet, which has just been ejected from the fluid-ejecting hole, of the fluid is less than 1 pl."

Claims 32, 33, 35 are allowable because of the inclusion of the limitation relating to the process control section

Claims 34, 36 are allowable because of the inclusion of the limitation relating to the diameter of the fluid-ejecting hole of the nozzle and the process control section.

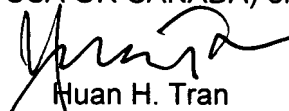
Claim 37 is allowable because of the inclusion of the limitation relating to the diameter of the fluid-ejecting hole of the nozzle.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huan H. Tran whose telephone number is (571) 272-2261. The examiner can normally be reached on at work on T-F from 6:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Huan H. Tran
Primary Examiner
Art Unit 2861

hht
07/11/07